International Journal of
Mental Health Nursing

Effectiveness of interventions aimed at improving grief and depression in caregivers of people with dementia: A systematic review and meta-analysis

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Abstract
Caregivers of people suffering from dementia may go through a grieving process prior to the death of the cared-for person, which is related to mental health and physical problems. Interventions aimed at improving grief and depression are being used in response to these difficulties. The aim of this study was to synthesize and evaluate the evidence for the effectiveness of interventions aimed at improving the grief process in home-based caregivers of people with dementia with the aim of reducing grief and depression. A systematic review, including a meta-analysis, was designed. Following the PRISMA guideline, original articles were searched in the databases: Medline, WOS, Scopus and PsycINFO, up to September 2022. Articles that evaluated interventions aimed at improving the grief process in caregivers of people with dementia, whose care recipients were alive at the beginning of the study at minimum and living at home were selected. Grief and depression were considered outcome variables. A meta-analysis was carried out with a fixed effects model for these variables and for the domains of the Caregiver Grief Scale (CGS). Eight articles met the inclusion and exclusion criteria. Most of the interventions aimed at improving the grief process showed an improvement in grief and depression. The 'emotional pain' and 'absolute loss' domains of the CGS stood out with an improvement in these variables. Interventions aimed at improving the grief process are relatively effective in reducing grief and depression. Interventions that are even more effective and more robust studies are needed.

KEYWORDS
caregivers, dementia, depression, grief, meta-analysis

INTRODUCTION

Globally, most people with dementia live at home and it is the family who is primarily responsible for providing the specific care they need. Within the family environment the woman is, in most cases, the person who assumes the greatest responsibility for daily care, exercising the role of primary caregiver (Bangerter et al., 2019; Martínez Marcos & De La Cuesta Benjumea, 2016; World Health Organization, 2021).

The process of caring for a person diagnosed with dementia is not an easy task and does not arise unexpectedly. It is a process of adaptation during the course of the disease, in which the tasks faced increase as the mental and physical abilities of the ill person deteriorate. Often, care provided at home is personalized, causing

disruptions in the life of the caregiver. From this approach, the experience and situation of the caregiver is different when care is provided in a nursing home (Moreno-Cámara et al., 2016).

Caregivers have to cope with many physical, psychological, social and professional changes, even having to give up much of their previous life (Warchol-Biedermann et al., 2014). These challenges, compared to caregivers of other chronic diseases and to the general population, have adverse effects on their health, and interventions aimed at minimizing them are needed (Karg et al., 2018; Sörensen & Conwell, 2011).

Caregiving in dementia is determined by several characteristics: absence of communication between the caregiver and the ill person, prolonged time of caregiving and existence of grief prior to the death of the person cared-for, which happens as a consequence of the continuous and progressive losses of the disease itself (Arruda & Paun, 2017). It is a unique experience, which generates great suffering and discomfort, in which the care recipient is physically present and, at the same time, emotionally detached from the caregiver (Chan et al., 2013).

Thus, in dementia care, grief is a process present long before death occurs. This particular type of grief has been referred to by different terms such as 'ambiguous loss' (Boss, 1999), 'pre-death grief' (Lindauer & Harvath, 2014) or 'dementia grief' (Blandin & Pepin, 2017). Each term presents different characteristics, though some overlap.

For Boss (1999), the concept of 'ambiguous loss' occurs when a loved one disappears in body or mind. It can disappear physically, without knowing the whereabouts of the person, or psychologically due to emotional or cognitive limitations.

'Pre-death grief' according to Lindauer and Harvath (2014) is the physical and emotional response of caregivers to the perceived losses in a person with dementia. This grief begins at the diagnosis of the disease, and it is caused by the psychological death of the care recipient, the long duration of care, the compromised communication between caregiver and patient (although it is maintained) and by the new changes and family roles.

'Dementia grief' for Blandin and Pepin (2017) is a unique role of the caregiver with anticipatory grief in response to successive losses of varying magnitude in people with dementia. This concept is different from the previous term 'pre-death grief' because it argues that there are disruptions in the communication caregiver–patient and because it explains that grief begins when impairments in consciousness occur early in the illness, not from the diagnosis of it.

Although in most cases care is provided at home, there are occasions when people with dementia need long-term care settings. This situation causes increased pain for caregivers, as feelings such as guilt, resentment, loneliness or conflicts with other family members and the care recipient arise. Moreover, these feelings intensify after the death, increasing physical and emotional health problems (Arruda & Paun, 2017; Paun et al., 2015). Thus, pre-death grief is a factor that may predict chronic or complicated grief that occurs after the death of the cared-for person (Holland et al., 2009; Schulz et al., 2006).

Interventions for caregivers of persons suffering from dementia are needed, as they increase their quality of life by reducing symptoms such as anxiety and depression (Livingston et al., 2020). Therefore, it seems necessary to develop interventions that also reduce the distress caused by pre-death grief, in an attempt to ameliorate the health and well-being of caregivers, as well as to prevent the potential occurrence of complicated grief.

Although reviews of interventions focused on grief and caregivers of people who suffer from dementia have been conducted in the last decade (Arruda & Paun, 2017; Byeon, 2020; Chan et al., 2013; Wilson et al., 2017), no study in which care recipients live exclusively at home with depression and grief as outcome variables have been found in the literature. Therefore, the aim of this systematic review and meta-analysis is to synthesize the evidence on the effectiveness of interventions aimed at improving the grief process in live-in caregivers of people with dementia.

METHODS

Design and search strategy

A systematic review including a meta-analysis was conducted. The protocol for this systematic review has been registered in PROSPERO (CRD42022357463).

A search was made following the recommendations of the PRISMA guide developed by Moher et al. (2016). The following databases were searched: Medline, WOS, Scopus and PsycINFO. The search strategy was: ('Grief' OR 'Mourning' OR 'Grief' OR 'Grieving') AND ('Intervention' OR 'Therapy' OR 'Training' OR 'Program' OR 'Psychosocial Intervention') AND ('Dementia') AND ('Caregiver' OR 'Carer' OR 'Family caregivers' OR 'Dementia caregivers'). Terms were searched in both natural and controlled language, taking into account their respective thesauri.

Inclusion and exclusion criteria

Original articles were selected if they complied with these pre-set inclusion criteria: (i) interventions aimed at improving the grief process; (ii) a sample of caregivers of persons suffering from dementia, whose care recipients were alive at least at the beginning of the study and living at home and (iii) grief and depression as intervention outcome variables. Articles published up to September 2022 were included. Studies whose sample included people with a previously diagnosed or treated mental illness

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or disorder such as depression and complicated grief were excluded.

Screening

Two reviewers screened the relevance of article titles and abstracts based on the research question and following the inclusion and exclusion criteria. Articles whose abstracts met the criteria were assessed at full text and a manual review of the bibliography of the studies was performed. Finally those that met the criteria were selected. A third reviewer resolved conflicts when there were disagreements.

Procedure and data extraction

Once the relevant articles were selected, a data extraction table was designed including information on the inclusion criteria (design, sample, intervention and outcome variables) as well as data on the objective of the article, the design of the intervention (methodology, content, sessions, duration) and the context. Through this table, quantitative data corresponding to the sample size were obtained and the measures of the outcome variables before and after the intervention were described for the control and experimental groups.

This process was developed by two researchers independently and ensuring maximum reliability. When disagreements arose, they were settled through consensus-building meetings and through the collaboration of a third researcher.

Risk of bias assessment

To assess the risk of bias of the controlled articles, the Cochrane Collaboration's tool (Higgins et al., 2011) was applied. Using the ROBINS-I instrument (Sterne et al., 2016), we assessed the risk of bias of the uncontrolled article. The risk of bias assessment was carried out by two researchers independently. Where there were discrepancies, these were resolved at a consensus meeting involving a third researcher.

Data analysis: meta-analysis

For the meta-analysis, studies that offered numeric data about the sample size and the mean and standard deviation of the outcome variables (depression and grief) were selected.

The meta-analysis was performed for the two outcome variables through the selection of all controlled studies. The study by Ott et al. (2010) was excluded as it was the only one without a control group.

For the variable grief, the MM Caregiver Grief Inventory (MM-CGI; Marwit & Meuser, 2002) and the Caregiver Grief Scale (CGS; Meichsner et al., 2016) were used. For the variable depression, the Geriatric Depression Scale (GDS; Brink et al., 2008) and the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) were applied. Their use was appropriate, as all instruments were adapted and validated to the study population. These questionnaires are different ways of measuring outcomes. However, through meta-analysis it has been possible to unify, integrate and interpret them on a common scale of effect, giving rise to the effect size.

Two of the included studies provided data not only on the global score, but also on the subscales of the CGS and a meta-analysis of these subscales was performed: emotional pain, relational loss, absolute loss and acceptance of loss (Meichsner et al., 2016).

Total effect size, standardized mean differences, each study weight and 95% confidence intervals were determined for each outcome variable (depression and grief). In order to examine heterogeneity between the studies, the I^2 statistic was calculated; approximate values of 25%, 50% and 75% were considered as low, medium and high levels of heterogeneity respectively (Botella Ausina & Sánchez Meca, 2015).

The meta-analysis was performed with MetaEasy: a meta-analysis add-in for Microsoft Excel (Kontopantelis & Reeves, 2009).

RESULTS

Figure 1 presents the study selection process. A total of 163 studies were identified, of which 85 were duplicates. The 78 articles initially identified were assessed taking the information contained in the title and abstract as reference. Of them, 66 were discarded as they did not comply with the inclusion criteria; a list of 12 articles was selected for full-text reading, excluding six for not including interventions aimed at improving the grief process and two for not fitting the study population and, finally, four articles were included. Subsequently, the references included in the selected articles were reviewed manually, identifying four more articles which were included in the review, as they also met the inclusion criteria. For the meta-analysis, seven articles were included.

In Table 1 are described the main characteristics of the selected articles and their interventions.

Four of the included articles used a randomized controlled experimental design (Burns et al., 2003; Haley et al., 2008; Meichsner et al., 2019; Meichsner & Wilz, 2016); two were non-randomized (Maccourt et al., 2017; Sanders & Sharp, 2004); one used a quasi-experimental randomized controlled design (Bravo-Benítez et al., 2021) and one was an uncontrolled pilot study (Ott et al., 2010).
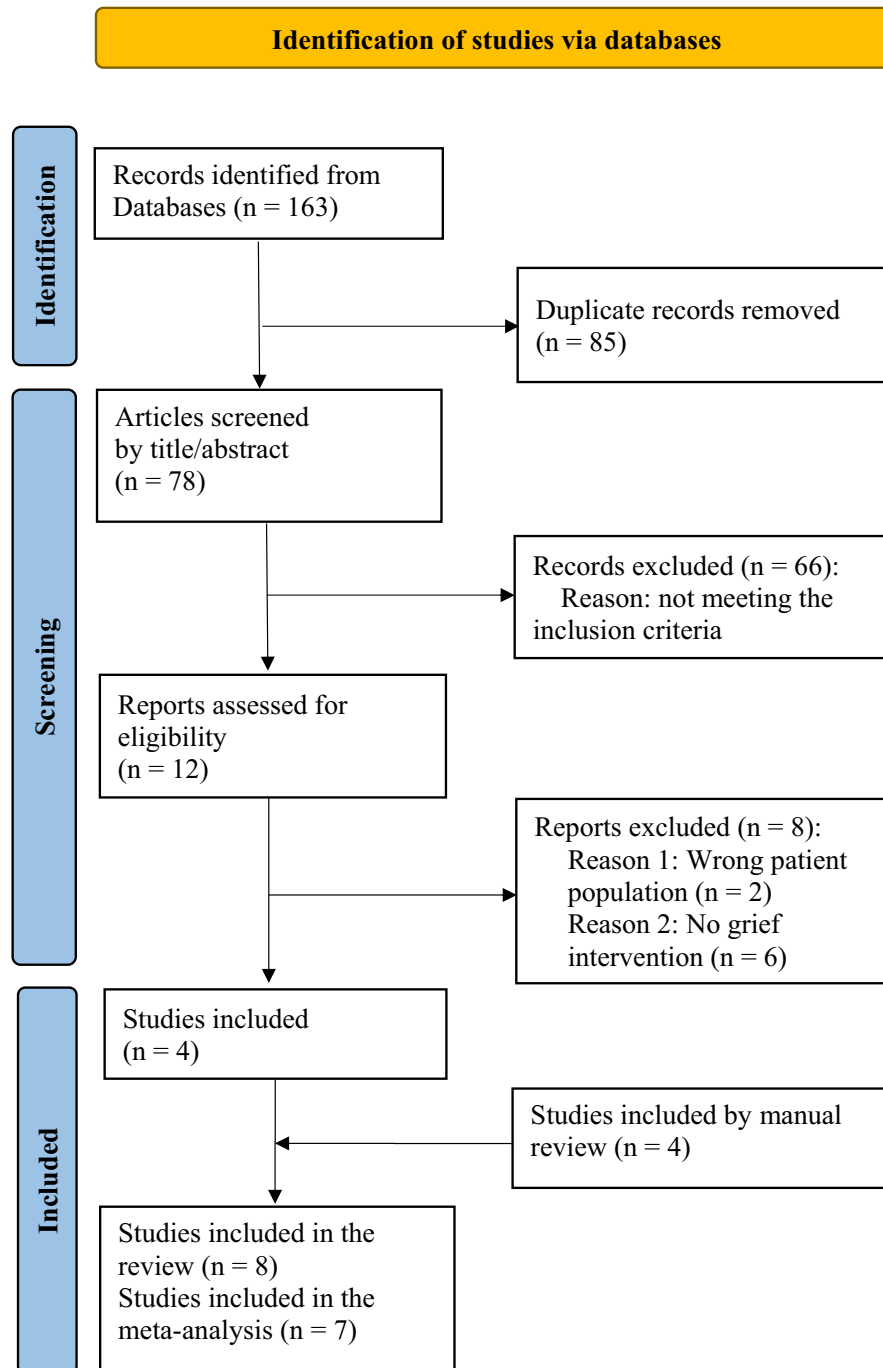
Identification of studies via databases

Identification

Records identified from
Databases (n = 163)

→ Duplicate records removed
(n = 85)

Screening

Articles screened
by title/abstract
(n = 78)

→ Records excluded (n = 66):
Reason: not meeting the
inclusion criteria

Reports assessed for
eligibility
(n = 12)

→ Reports excluded (n = 8):
Reason 1: Wrong patient
population (n = 2)
Reason 2: No grief
intervention (n = 6)

Included

Studies included
(n = 4)

← Studies included by manual
review (n = 4)

Studies included in the
review (n = 8)
Studies included in the
meta-analysis (n = 7)

FIGURE 1 PRISMA flowchart of the article selection process (Moher et al., 2016).

All study participants were caregivers of people who suffered from dementia, and sample sizes ranged from 17 to 273 caregivers. All eight articles stated a predominantly female population and four of these articles stated that they were mostly residing with the person cared for (Haley et al., 2008; Meichsner et al., 2019; Meichsner & Wilz, 2016; Ott et al., 2010).

Some interventions were based on the models by other authors, as in the study by Ott et al. (2010), based on Meuser and Marwit's Dementia Caregiver Grief Model (Marwit & Meuser, 2001). Others were modifications

of previous interventions already carried out (Bravo-Benítez et al., 2021; Meichsner et al., 2019). Regarding the orientation of the interventions, four of them (Bravo-Benítez et al., 2021; Burns et al., 2003; Meichsner et al., 2019; Meichsner & Wilz, 2016) had a cognitive behavioural approach and the rest were interventions with educational sessions.

In the interventions with caregivers, many elements were worked on: reinforcement of personal resources (Bravo-Benítez et al., 2021; Maccourt et al., 2017; Meichsner et al., 2019; Ott et al., 2010), coping

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TABLE 1 Characteristics of the included studies.

Authors	Study methodology	Location	Aim	Sample (*n*)	Interventions	Control	Follow-up duration	Instruments for evaluation	Main outcomes
Bravo-Benitez et al. (2021)	Quasi-experimental randomized controlled study	Spain	To adapt a grief intervention programme for relatives who are caregivers of patients with dementia, and to test its effectiveness in improving the manifestations of grief and other variables associated with health	*n* = 27 IG *n* = 25 CG	Based on Shear and Bloom's grief intervention. 1.5h weekly along 10 sessions: imaginal exposure and in vivo exposure of anxious situations, cognitive restructuring, support in the personal resources, information about available resources, behavioural trials, training in social and coping skills, encouragement of rewarding activities and promotion of social support through a support group. Duration: 2 months and a half	Daily activities. Waiting list for some of the CG who received the intervention later	2 weeks more (two sessions)	CGS, CBI, CD-RISC, AAQ-II, PTGI, PAC, SF-36, Interview on personal and socio-demographic data	Caregiver grief, resilience, caregiver overload, post-traumatic growth, acceptance and action, perceived health and positive aspects of caregiving and are improved. In CG everything worsens except for acceptance and action, which is maintained
Burns et al. (2003)	RCT	USA	To develop and pilot two primary care interventions aimed at minimizing the psychological distress of Alzheimer's caregivers	*n* = 85 BC *n* = 82 EC	Enhanced care: Educational sessions with 25 pamphlets on patient behaviours (aggressiveness, confusion, hallucinations, bathroom problems, nutrition, sexuality and wandering)+12 pamphlets oriented to the caregiver's well-being in response to these problems (stress management, anger, grief and communication)+training in cognitive behavioural skills (relaxation, coping with negative thoughts or emotional distress; 60 min each session) Duration: 24 months	Behaviour care: Educational sessions using the same 25 behavioural handouts to improve care recipient behaviour management (aggressiveness, confusion, hallucinations, bathroom problems, nutrition, sexuality and wandering). Knowledge of the disease was assessed and areas of concern about the patient's functioning were identified (30 min each session)	No follow-up	Health status scale, GWB, CES-D, RMBP	In EC, increased general well-being of the caregiver. In BC, worse depression scores and increased risk. In both groups, improved dislike associated with care recipient behaviours

TABLE 1 (Continued)

Authors	Study methodology	Location	Aim	Sample (*n*)	Interventions	Control	Follow-up duration	Instruments for evaluation	Main outcomes
Haley et al. (2008)	RCT	USA	To analyse the joint effects of bereavement and an intervention focused on depressive symptoms present in caregivers of people with dementia	*n* = 122 IG *n* = 132 CG	Educational sessions on how to resolve family conflicts through communication between family members, reinforce family support, develop skills to manage difficult patient behaviour, report on available resources (two individual sessions and four family sessions for 4 months) + weekly emotional support group for affiliates + telephone or face-to-face counselling. Duration: 12 months	Usual care and access to intervention counselling, outside assistance or support	2 years after the death of the cared-for person	GDS	IG had fewer depressive symptoms, pre-death of the person with dementia. After death, decreased depression was observed in both groups (especially in IG) and increased depression in caregivers who had not previously experienced from the accommodation of the cared-for persons in a nursing home
MacCourt et al. (2017)	Experimental non-randomized controlled study	USA	To determine the effectiveness and design of a grief coaching intervention for caregivers of people with dementia	*n* = 123 IG *n* = 77 CG	Six coaching intervention sessions: individual face to face or by telephone (1 h each), group face to face, telephone or online (1 h 30 min each). Content of the sessions: Incorporation to the changes, perspectives of grief, living with grief, honouring grief, supporting oneself and increasing resilience. Duration: No information	No intervention	Two follow-up sessions according to the intervention format	MM-CGI, The Empowerment Questionnaire, The Resilience Scale, The Demographic and Caregiving Characteristics Questionnaire, Shortened version of The Brief COPE	Brief, resilience, grief and empowerment improved in IG
Meichsner and Wilz (2016)	RCT	Germany	To evaluate the improvement in coping with grief before death in caregivers of persons with dementia using a cognitive behavioural intervention (including a grief intervention module). To identify whether these effects are maintained at a 6-month follow-up	*n* = 139 IG *n* = 134 CG	Twelve individual telephone therapy sessions of 50 min. Cognitive behavioural technique focused on coping with changes, promotion acceptance of the disease, management associated negative emotions, help to recognize losses, identification of resources and preparation for the death of the family member. Duration: 6 months	They received data and written information about dementia and related care and a financial compensation of 40 euros	At 6 months	CGS, GDS*	Greater reduction in pre-death grief in IG (especially those who continue to care at home) than in the CG

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TABLE 1 (Continued)

Authors	Study methodology	Location	Aim	Sample (n)	Interventions	Control	Follow-up duration	Instruments for evaluation	Main outcomes
Meichsner et al. (2019)	RCT	Germany	To assess the effectiveness of an Internet-based cognitive behavioural intervention on caregivers and to determinate the acceptability of its properties	$n = 19$ IG $n = 18$ CG	Adaptation of the Tele. TAnDem program to an online version. Cognitive behavioural intervention: crisis management, needs analysis, psychoeducation relating the disease and emotions, promotion of problem-solving skills, increase in informal and professional support, coping with change and grief, increased self-care, stress management and final evaluation. Eight messages (1 per week via Internet). Duration: 2 months	After completing the follow-up assessment, the intervention was carried out	At 6 months	GDS, CES-D, Psychosocial Resource Utilization Questionnaire for Family Caregivers of People with Dementia, CGS, 2 visual analogue scales, CSQ-8	There were no differences between both groups regarding burden of care and depression. In the IG improved pre-death grief, increased the satisfaction with treatment and the programme, the emotional well-being and used more psychosocial resources
Ott et al. (2010)	Non-controlled study	USA	To assess the possibility of basing the Easing the Way intervention on a manual. To evaluate the properties of the intervention by examining changes in grief and mental health	$n = 20$ IG	Based on Meuser, Marwit and Sanders' Dementia Caregiver Grief Model. Evaluation in three stages. Face-to-face or telephone sessions. The content of the intervention included: emotional support, grief counselling, family problem solving, skills development and information on community resources. Duration: 5 months	No control group	At 3 months	Adaptation of the Caregiver Questionnaire, STAI, MM-CGI-SF, CES-D, Positive States of Mind, BC, Programme Acceptability, The General Self-Efficacy Scale	Decrease in anxiety (especially), depression, and grief (the least). Increase in positive mood, brief and self-efficacy. Good acceptability
Sanders and Sharp (2004)	Experimental non-randomized controlled study	USA	To introduce a grouped psychoeducational and grief design with the aim of helping caregivers identify the grief associated with their role	$n = 10$ IG $n = 7$ CG	5-week group intervention (1 session every Saturday). Identification of feelings of grief and loss, promotion of coping strategies, information on available community resources and palliative care. Duration: 1 month and 1 week	Participation in regular monthly support groups	No follow-up	MM-CGI	Increased grief in the IG, though it was still lower than in the CG. IG: good satisfaction with the intervention. Needs and issues raised in group sessions

Abbreviations: AAQ-II, Acceptance and Action Questionnaire; BC, brief cope; CBI, Caregiver Burden Interview; CD-RISC, Connor–Davidson Resilience Scale; CES-D, Center for Epidemiologic Studies Depression Scale; CG, control group; CGS, Caregiver Grief Scale; CSQ-8, Client Satisfaction Questionnaire; GDS*, Global Deterioration Scale; GDS, Geriatric Depression Scale; GWB, Modified General Well-Being scale; IG, intervention group; MM-CGI, MM Caregiver Grief Inventory; MM-CGI-SF, MM Caregiver Grief Inventory Short Form; PAC, positive aspects of caregiving; PTGI, Post-Traumatic Growth Inventory; RCT, randomized controlled trial; RMBPC, Revised Memory and Behaviour Problems Checklist; SF-36, SF-36 Health Survey; STAI, State–Trait Anxiety Inventory.

strategies (Bravo-Benítez et al., 2021; Burns et al., 2003; Meichsner et al., 2019; Meichsner & Wilz, 2016; Sanders & Sharp, 2004), development of social skills (Bravo-Benítez et al., 2021; Burns et al., 2003; Haley et al., 2008), adaptation to new ways of living (Maccourt et al., 2017; Meichsner & Wilz, 2016), management of the patient's behaviour (Burns et al., 2003; Haley et al., 2008; Meichsner et al., 2019), promotion of rewarding activities (Bravo-Benítez et al., 2021; Burns et al., 2003), emotion management (Burns et al., 2003; Maccourt et al., 2017; Meichsner et al., 2019; Meichsner & Wilz, 2016; Ott et al., 2010), caregiver needs (Meichsner et al., 2019), preparation and information for the future death of the patient (Meichsner

& Wilz, 2016; Sanders & Sharp, 2004), social support (Bravo-Benítez et al., 2021; Haley et al., 2008), promotion of family support (Haley et al., 2008; Meichsner et al., 2019; Ott et al., 2010), recognition and acceptance of losses (Maccourt et al., 2017; Meichsner et al., 2019; Meichsner & Wilz, 2016; Ott et al., 2010; Sanders & Sharp, 2004), self-care (Meichsner et al., 2019), knowledge of available resources (Bravo-Benítez et al., 2021; Haley et al., 2008; Meichsner & Wilz, 2016; Ott et al., 2010; Sanders & Sharp, 2004), information about the disease (Meichsner et al., 2019; Ott et al., 2010) and the possibility of formal care (Meichsner et al., 2019).

All the included studies used interventions aimed at improving the grief process with different features depending on the design and length of the sessions. The duration of the interventions varied widely, as shown in Table 1, ranging from 1.5 to 24 months. In one of them (Maccourt et al., 2017), the duration was not reported. Regarding the format, most were face to face, though some used the telephone format (Meichsner & Wilz, 2016), online (Meichsner et al., 2019), or even a combination of several methods (Haley et al., 2008; Maccourt et al., 2017; Ott et al., 2010).

The instruments used to assess the outcome variables were shared by some articles, all adapted and validated for the population studied. For the variable grief, the MM-CGI (Marwit & Meuser, 2002), the MM Caregiver Grief Inventory Short Form (MM-CGI-SF; Marwit & Meuser, 2006) and the CGS (Meichsner et al., 2016) were used.

In two studies (Maccourt et al., 2017; Sanders & Sharp, 2004), the MM-CGI was used. This questionnaire assesses the grief before death in caregivers of people with dementia. It has 50 items distributed in three subscales: (a) personal sacrifice burden, with 18 items; (b) heartfelt sadness and longing, with 15 items and (c) worry and felt isolation, which includes 17 items. The response scale has five options (from 1 = strongly disagree to 5 = strongly agree). Total scores can be calculated for each subscale and summed to calculate a total grief score.

The MM-CGI-SF was used in the study by Ott et al. (2010). This questionnaire is a shortened version of the previous questionnaire, the MM-CGI, and has the same purpose. It has 18 items, distributed in the same subscales as its extended version, and in each dimension, it has six items. The response scale has five options, with the same responses as the MM-CGI. In addition, it is

FIGURE 2 Risk of bias for the studies assessed with the Cochrane Collaboration's tool.

TABLE 2 Risk of bias for the study assessed with the ROBINS-I tool.

	Bias due to confounding	Bias in selection of participants into the study	Bias in classification of interventions	Bias due to deviations from intended interventions	Bias due to missing data	Bias in measurement of the outcome	Bias in selection of the reported result	Overall bias
Ott et al. (2010)	Moderate	Serious	Moderate	Moderate	Serious	Serious	Moderate	Serious

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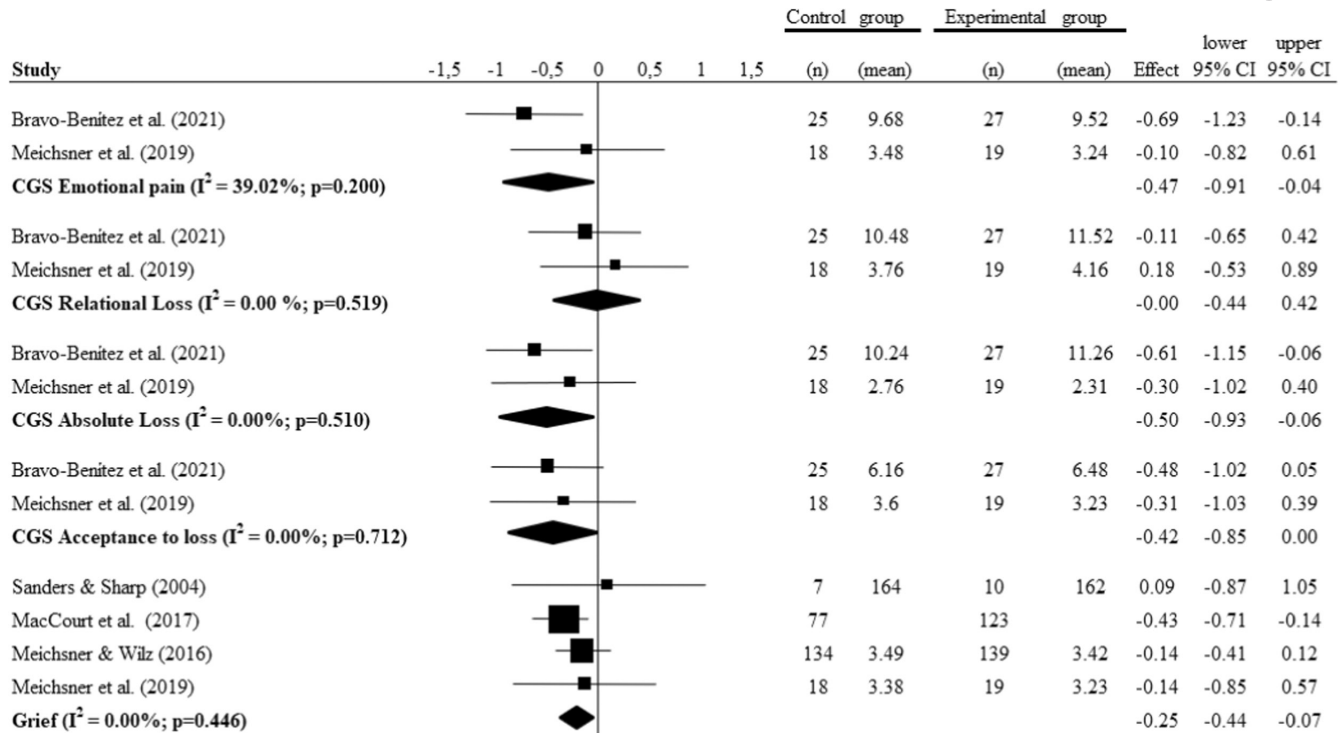
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FIGURE 3 Meta-analysis of the grief variable and subscales of the Caregiver Grief Scale (CGS). The horizontal axis represents the Effect (standardised mean difference); $I2$, Heterogeneity coefficient; p, Significance for the Q-statistic.
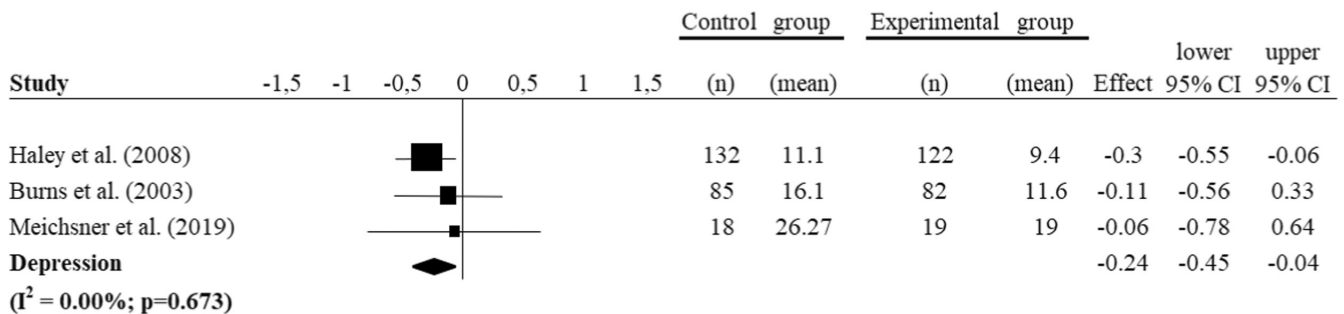

FIGURE 4 Meta-analysis of the depression variable. Horizontal axis represents Effect (standardised mean difference); $I2$, Heterogeneity coefficient; p, Significance for the Q-statistic.

possible to calculate a total grief score as well as a score for each dimension.

The CGS was used in the articles by Meichsner et al. (2019) and Meichsner and Wilz (2016). This scale assesses the multifaceted nature of caregiver grief. It has 11 items distributed in four dimensions: (a) emotional pain, with three items; (b) relational loss, with three items; (c) absolute loss, which includes three items and (d) acceptance of loss, with two items. The response scale has five options (from 1 = strongly disagree to 5 = strongly agree). For scoring, it is possible to assess each subscale, and they can also be summed to calculate a total grief score.

For the variable depression, the CES-D (Radloff, 1977) was applied in several included studies (Burns et al., 2003; Meichsner et al., 2019; Ott et al., 2010). This scale has 20 items distributed in four dimensions: (a) depressed affect;

(b) positive affect; (c) somatic and retarded activity and (d) interpersonal. It has four answer options based on the frequency of depressive symptoms (0 = less than 1 day; 1 = 1 or 2 days; 2 = 3 or 4 days, 3 = 5 or 7 days). The total scale score is the sum of the points, with a range from 0 to 60.

The GDS (Brink et al., 2008) was used in the article by Haley et al. (2008) to assess depression through 30 items. The response options are dichotomous (yes or no) with respect to how caregivers have felt during the last week. A high score (≥20) indicates the presence of moderate depressive symptoms.

Most of the included articles were longitudinal and reported follow-up outcomes at 2 weeks (Bravo-Benítez et al., 2021), 3 months (Ott et al., 2010), 6 months (Meichsner et al., 2019; Meichsner & Wilz, 2016) and

24 months after the cared-for person had died (Haley et al., 2008). Two studies did not include follow-up (Burns et al., 2003; Sanders & Sharp, 2004) and another one included two follow-up sessions, but did not specify the duration (Maccourt et al., 2017).

Apart from grief and depression, several studies (Bravo-Benítez et al., 2021; Burns et al., 2003; Maccourt et al., 2017; Meichsner et al., 2019; Ott et al., 2010) included other variables such as resilience, elusive behaviour towards personal experiences and being psychologically adaptable, positive aspects of caregiving and perceived health, coping, empowerment and control, post-traumatic growth, use of psychosocial resources, emotional well-being, positive moods, anxiety, general well-being, caregiver burden, impact of patient behaviours and self-efficacy. For all these variables, there was an improvement through the interventions except for caregiver burden, which Meichsner et al. (2019) found to be no different. Acceptability and satisfaction were also assessed in some studies (Meichsner et al., 2019; Ott et al., 2010; Sanders & Sharp, 2004), indicating good acceptability and high satisfaction.

Risk of bias

There was a quite varied risk of bias, and many studies did not offer sufficient data to accurately judge it. On the basis of the Cochrane Collaboration's tool for the risk of bias assessment of controlled studies, this was high in the case of selection bias (allocation concealment) and intermediate for the domains associated with selection bias (random sequence generation), conduct, detection and reporting bias. Figure 2 shows the risk of bias of the selected studies with a control group.

The study by Ott et al. (2010), as it was not controlled, was assessed using the ROBINS-I tool. The risk of bias was generally high. Table 2 shows the risk of bias of this study.

Summary of results: meta-analysis

Three studies were incorporated for the depression variable (Burns et al., 2003; Haley et al., 2008; Meichsner et al., 2019). For the grief variable, four articles were incorporated (Maccourt et al., 2017; Meichsner et al., 2019; Meichsner & Wilz, 2016; Sanders & Sharp, 2004). Two of the studies (Bravo-Benítez et al., 2021; Meichsner et al., 2019) also provided data on the subscales of the CGS, and a meta-analysis of these was performed.

Outcome variable: grief

For the analysis of the grief variable, five articles were evaluated (Figure 3). The effect of the intervention was effective in four studies (Bravo-Benítez et al., 2021; Maccourt et al., 2017; Meichsner et al., 2019; Meichsner & Wilz, 2016), though three of them (Bravo-Benítez et al., 2021; Meichsner et al., 2019; Meichsner & Wilz, 2016) were not significant. In most studies and compared to the control group, grief improved in the experimental group. Only one of the studies (Sanders & Sharp, 2004) proved to have a negative effect or to worsen grief after the intervention in the experimental group, though this was not significant.

The standardized mean difference was −0.25 (95% CI: −0.44, −0.07), which implies a slight positive effect of interventions aimed at improving the grief process. Heterogeneity between studies was not significant ($p = 0.446$).

Figure 3 also displays the meta-analysis performed on the different subscales of the CGS (Meichsner et al., 2016). In its first domain, 'emotional pain', a significant standardized mean difference was obtained, at −0.47 (95% CI: −0.91, −0.04), with both items having positive effects. Heterogeneity between studies was intermediate ($I^2 = 39.02\%$), but not significant ($p = 0.200$). Given this result, caution should be taken, as it shows a certain degree of variability between studies, which may be due to the intervention used or another variable.

For the second domain of the CGS questionnaire, which measures 'relational loss', the studies give opposite results. The standardized mean difference is null, as it was −0.00 (95% CI: −0.44, 0.42) and showed that there was no effect. Heterogeneity between studies was not significant ($p = 0.519$). Regarding the 'absolute loss' domain (third subscale of the CGS questionnaire), the article by Bravo-Benítez et al. (2021) stands out above all. A significant standardized mean difference was obtained, at −0.50 (95% CI: −0.93, −0.06), and there was no heterogeneity ($p = 0.510$).

For the 'acceptance of loss' domain (fourth subscale of the CGS questionnaire), the standardized mean difference was not significant at −0.42 (95% CI: −0.85, −0.00). Heterogeneity between studies was also not observed ($p = 0.712$).

Outcome variable: depression

Depression was used as an outcome variable in three studies in total, as shown in Figure 4. In one of them (Haley et al., 2008), the intervention proved to have a positive and significant effect compared to the control group, indicating an improvement in depression. Two of the studies showed no significant difference between both groups (Burns et al., 2003; Meichsner et al., 2019).

In the article performed by Haley et al. (2008), the experimental group again had reduced depressive symptoms after the intervention, yet not after the cared-for person died. An increase in depression was observed in caregivers who had not previously experienced the

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accommodation of cared-for persons in a nursing home. The standardized mean difference was −0.24 (95% CI: −0.45, −0.04), which implies a modest and positive effect of the interventions. Regarding heterogeneity between studies, this is not significant ($p = 0.673$).

DISCUSSION

This is the first systematic review and meta-analysis that assesses the effectiveness of interventions aimed at ameliorating the grief process in caregivers of persons suffering from dementia, with the added novelty that the care recipients lived at home exclusively. The data from this review indicate a positive beneficial effect on grief and depression, showing a small–moderate mean effect size.

The eight included studies, despite having some variability in the interventions, could be evaluated in a meta-analysis in relation to the outcome variables, except the article by Ott et al. (2010). For these variables, the mean effect size was small and the confidence intervals included their upper limits close to 0 (zero effect). Thus, the demonstrated efficacy in reducing depression and grief through interventions aimed at improving the grief process is relative. Despite this, the data were favourable on grief and depression, similar results to those found in other systematic reviews (Byeon, 2020; Frias et al., 2020; Sun et al., 2022; Wilson et al., 2017).

As for depression, one of the included studies found no differences (Meichsner et al., 2019). Possibly it was influenced by the fact that the intervention took place over the Internet, making it more difficult to express experiences through writing. In addition, it may have been influenced by the caregivers' level of knowledge of this technological format and because the duration of sending messages was individualized, which may have caused heterogeneity of time between evaluations.

Regarding grief, Sanders and Sharp (2004) described an opposite effect compared to the other included articles. This result may be affected by the small sample size, the differences between the two groups as well as their methodology and the brevity of the intervention. With respect to the different subscales of the CGS, most of them presented a positive effect towards the reduction of these variables that jointly assess caregiver grief, with the 'emotional pain' and 'absolute loss' variables standing out.

Regarding the questionnaires, three different questionnaires were used for the grief variable: CGS, MM-CGI and MM-CGI-SF, the latter being the short version of the MM-CGI. For the depression variable, only two were used: CES-D and GDS. Interventions have been incorporated with only two approaches: the educational approach and a cognitive behavioural orientation. Although the interventions and questionnaires of the studies have shown some variability, it has been possible to homogenize and obtain concrete results associated with the outcome variables.

In this review, most of the included studies had a short follow-up. The main advantage of long-term follow-up, of a minimum of 6 months, is to be able to evaluate whether the results are sustained over time, though in many cases it involves certain obstacles such as non-compliance, loss of participants and death of care recipients (Wiegelmann et al., 2021). Moreover, it should be noted that grief for caregivers is a complex experience affected by cultural, family, personal and environmental factors, so the outcomes of the interventions may vary (Arruda & Paun, 2017).

In relation to the types of study, most were randomized studies (Bravo-Benítez et al., 2021; Burns et al., 2003; Haley et al., 2008; Meichsner et al., 2019; Meichsner & Wilz, 2016) and all the included articles were controlled, except for the study by Ott et al. (2010). The variability of study design was considered, especially in the meta-analysis, which was only carried out for those studies that did have a control group, excluding the uncontrolled study. Despite this, the meta-analysis provided favourable and beneficial results.

In this review, articles in which care recipients were alive at least at the beginning of the study were included, and only one article (Haley et al., 2008) that also considered assessing caregivers after the death of the recipient was found. It would be interesting to consider interventions after death in order to compare variables at these two time intervals.

The outcome variables are to some extent related, negatively linked to the caregiving process in this type of population (Arruda & Paun, 2017; Chan et al., 2013; Cooper et al., 2007; Livingston et al., 2020; Mahoney et al., 2005). There are few results on the influence of interventions aimed at improving the grief process on other related variables such as caregiver strain, coping and resilience (Bravo-Benítez et al., 2021; Burns et al., 2003; Maccourt et al., 2017; Meichsner et al., 2019; Ott et al., 2010).

Interventions aimed at improving the grief process require a great deal of acceptance and commitment to achieve successful outcomes. This entails a great effort from caregivers due to their lack of time, and despite its importance, only one included study (Ott et al., 2010) discussed the acceptability of the programme by caregivers.

In most domains, a high and unclear risk of bias was obtained, in line with other reviews of interventions aimed at improving the grief process (Byeon, 2020; Wilson et al., 2017). It should be highlighted that the quality of the data from the articles seems questionable, since none of the selected studies meets the requirement that all the assessed domains are of low-level risk of bias.

Although we have used ROBINS-I tool to evaluate the uncontrolled article by Ott et al., the risk of bias also

remained high in that study. It was impossible to determine whether pre- and post-intervention changes were due to the intervention rather than to other factors.

With the systematic review, it was possible to determine some variability in the included studies, without showing considerable effectiveness. However, thanks to the meta-analysis carried out, more valid conclusions could be drawn, increasing the statistical power of the study and showing that the articles are effective for grief, depression and two of the subscales of the CGS ('emotional pain' and 'absolute loss').

Future lines of research in this context should develop rigorous studies of interventions to achieve an adequate regulation of biases and consider other variables such as personal, family, cultural and environmental factors that may influence these interventions. Furthermore, in order to promote access, it would be advisable to implement them in primary care centres and in associations of relatives of people with dementia, where their benefits and the commitment of the participants would be promoted.

LIMITATIONS

After conducting this search, it appears that there are few primary studies in the literature with the established criteria. It should be noted that the conclusions that emerged from this study should be considered with caution.

The systematic review depends on a limited number of eight studies and the meta-analysis of the outcome variables has been carried out with seven articles. In addition, the results of the subscales of the CGS were obtained from only two studies.

Another limitation has been the difficulty to make comparisons given the variability of the interventions and measuring instruments.

The risk of bias has been high and unclear, mainly due to blinding issues inherent to this type of interventions, in which masking is very complicated. In addition, it has been complicated to adjust to the risk of bias assessment Cochrane Collaboration's tool due to the very nature of non-pharmacological interventions.

CONCLUSION

The available evidence on the effectiveness of interventions aimed at ameliorating the grief process in caregivers of dementia patients is limited. The few existing interventions are shown to be effective for depression and grief, though with modest results. In addition, a positive effect was shown in the improvement of the 'emotional pain' and 'absolute loss' variables in the two subscales of the CGS.

Interventions aimed at improving the grief process appear to be promising, though further research and

development of interventions is needed to improve their effectiveness, especially in the medium and long term.

RELEVANCE FOR CLINICAL PRACTICE

The development of interventions aimed at improving the grief process may be a key factor in preventing chronic or complicated grief, as well as depression, once the cared-for person has died.

These interventions could increase the quality of life of caregivers and mitigate the appearance of physical and psychological symptoms, thus reducing the use of resources and services. Therefore, longer term follow-up and further research on these types of interventions and their benefits on the wellness of caregivers of people with dementia are essential.

CONFLICT OF INTEREST STATEMENT
The authors state that there is no conflict of interests.

DATA AVAILABILITY STATEMENT
The data that support the findings of this study are available from the corresponding author upon reasonable request.

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How to cite this article: Sánchez-Alcón, M., Sánchez-Ramos, J.L., Garrido-Fernández, A., Sosa-Cordobés, E., Ortega-Galán, Á.M. & Ramos-Pichardo, J.D. (2023) Effectiveness of interventions aimed at improving grief and depression in caregivers of people with dementia: A systematic review and meta-analysis. *International Journal of Mental Health Nursing*, 00, 1–14. Available from: https://doi.org/10.1111/inm.13142